<u>Claims</u>

What is claimed is:

1. A method of filtering pixels of video frames of a
sequence of video frames for facilitating video encoding
thereof, said method comprising:

    obtaining pixel values of video frames of the
    sequence of video frames; and

    programmably vertically filtering said pixel
    values of said video frames.

2. The method of claim 1, wherein said programmably
vertically filtering comprises obtaining vertical filter
coefficients for use in vertically filtering said pixel
values.

3. The method of claim 2, wherein said obtaining
vertical filter coefficients comprises dynamically obtaining
new vertical filter coefficients during said programmably
vertically filtering of pixel values.

4. The method of claim 2, wherein said vertical
filter coefficients comprise at least two programmable
luminance filter coefficients and at least two programmable
chrominance filter coefficients.

5.   The method of claim 4, wherein said programmably
vertically filtering further comprises:

separating luminance components and chrominance
components of said pixel values in a vertical filter
buffer;

vertically filtering luminance components of said
pixel values using said at least two programmable
luminance filter coefficients and vertically filtering
chrominance components of said pixel values using said
at least two programmable chrominance filter
coefficients; and

merging filtered luminance component data and
filtered chrominance component data after said
vertically filtering of luminance components and said
vertically filtering of chrominance components.

6.   The method of claim 5, further comprising performing at least one of said vertically filtering luminance components of said pixel values and said vertically filtering chrominance components of said pixel values, as follows:

vertically filtering luminance components of said pixel values by determining filtered luminance component data using:

$$Lum(filtered) = \frac{L_1 Pl_1 + L_2 Pl_2 + L_3 Pl_3 + L_4 Pl_4}{256}$$

where:

Lum(filtered)= a filtered pixel luminance component,

L_1, L_2, L_3, L_4 = programmable luminance filter coefficients,

Pl_1, Pl_2, Pl_3, Pl_4 = luminance component data for vertical pixels P_1, P_2, P_3, P_4 prior to vertical filtering; and

vertically filtering chrominance components of said pixel values by determining filtered chrominance component data using:

$$Chr(filtered) = \frac{C_1 Pc_1 + C_2 Pc_2 + C_3 Pc_3 + C_4 Pc_4 + C_5 Pc_5}{256}$$

where:

Chr(filtered) = a filtered pixel chrominance component,

C_1, C_2, C_3, C_4, C_5 = programmable chrominance filter coefficients, and

Pc_1, Pc_2, Pc_3, Pc_4, Pc_5 = chrominance component data for vertical pixels P_1, P_2, P_3, P_4, P_5 prior to vertical filtering.

7.   The method of claim 2, wherein said vertical filter coefficients are dynamically programmable per video frame of the sequence of video frames for enhancing video encoding of the sequence of video frames.

8.   A system for filtering pixels of video frames of a sequence of video frames for facilitating video encoding thereof, said system comprising:

   means for obtaining pixel values of video frames of the sequence of video frames; and

   means for programmably vertically filtering said pixel values of said video frames.

9.   The system of claim 8, wherein said means for programmably vertically filtering comprises means for obtaining vertical filter coefficients for use in vertically filtering said pixel values.

10.   The system of claim 9, wherein said means for obtaining vertical filter coefficients comprises means for dynamically obtaining new vertical filter coefficients during said programmably vertically filtering of pixel values.

11.   The system of claim 9, wherein said vertical filter coefficients comprise at least two programmable luminance filter coefficients and at least two programmable chrominance filter coefficients.

12.   The system of claim 11, wherein said means for programmably vertically filtering further comprises:

means for separating luminance components and chrominance components of said pixel values in a vertical filter buffer;

means for vertically filtering luminance components of said pixel values using said at least two programmable luminance filter coefficients and for vertically filtering chrominance components of said pixel values using said at least two programmable chrominance filter coefficients; and

means for merging filtered luminance component data and filtered chrominance component data after said vertically filtering of luminance components and said vertically filtering of chrominance components.

13.   The system of claim 12, further comprising means for performing at least one of said means for vertically filtering luminance components of said pixel values and said means for vertically filtering chrominance components of said pixel values, as follows:

means for vertically filtering luminance components of said pixel values by determining filtered luminance component data using:

$$Lum(filtered) = \frac{L_1 Pl_1 + L_2 Pl_2 + L_3 Pl_3 + L_4 Pl_4}{256}$$

where:

Lum(filtered)= a filtered pixel luminance component,

L_1, L_2, L_3, L_4 = programmable luminance filter coefficients,

Pl_1, Pl_2, Pl_3, Pl_4 = luminance component data for vertical pixels P_1, P_2, P_3, P_4 prior to vertical filtering; and

means for vertically filtering chrominance components of said pixel values by determining filtered chrominance component data using:

$$Chr(filtered) = \frac{C_1 Pc_1 + C_2 Pc_2 + C_3 Pc_3 + C_4 Pc_4 + C_5 Pc_5}{256}$$

where:

Chr(filtered) = a filtered pixel chrominance component,

C_1, C_2, C_3, C_4, C_5 = programmable chrominance filter coefficients, and

Pc_1, Pc_2, Pc_3, Pc_4, Pc_5 = chrominance component data for vertical pixels P_1, P_2, P_3, P_4, P_5 prior to vertical filtering.

14.   The system of claim 9, wherein said vertical filter coefficients are dynamically programmable per video frame of the sequence of video frames for enhancing video encoding of the sequence of video frames.

15.   At least one program storage device readable by a machine, tangibly embodying at least one program of instructions executable by the machine to perform a method of filtering pixels of video frames of a sequence of video frames for facilitating video encoding thereof, said method comprising:

obtaining pixel values of video frames of the sequence of video frames; and

programmably vertically filtering said pixel values of said video frames.

16.   The at least one program storage device of claim 15, wherein said programmably vertically filtering comprises obtaining vertical filter coefficients for use in vertically filtering said pixel values.

17.   The at least one program storage device of claim 16, wherein said obtaining vertical filter coefficients comprises dynamically obtaining new vertical filter coefficients during said programmably vertically filtering of pixel values.

18.   The at least one program storage device of claim 16, wherein said vertical filter coefficients comprise at least two programmable luminance filter coefficients and at least two programmable chrominance filter coefficients.

19.   The at least one program storage device of claim 18, wherein said programmably vertically filtering further comprises:

separating luminance components and chrominance components of said pixel values in a vertical filter buffer;

vertically filtering luminance components of said pixel values using said at least two programmable luminance filter coefficients and vertically filtering chrominance components of said pixel values using said at least two programmable chrominance filter coefficients; and

merging filtered luminance component data and filtered chrominance component data after said vertically filtering of luminance components and said vertically filtering of chrominance components.

20. The at least one program storage device of claim 19, further comprising performing at least one of said vertically filtering luminance components of said pixel values and said vertically filtering chrominance components of said pixel values, as follows:

vertically filtering luminance components of said pixel values by determining filtered luminance component data using:

$$Lum(filtered) = \frac{L_1 Pl_1 + L_2 Pl_2 + L_3 Pl_3 + L_4 Pl_4}{256}$$

where:

Lum(filtered)= a filtered pixel luminance component,

L_1, L_2, L_3, L_4 = programmable luminance filter coefficients,

Pl_1, Pl_2, Pl_3, Pl_4 = luminance component data for vertical pixels P_1, P_2, P_3, P_4 prior to vertical filtering; and

vertically filtering chrominance components of said pixel values by determining filtered chrominance component data using:

$$Chr(filtered) = \frac{C_1 Pc_1 + C_2 Pc_2 + C_3 Pc_3 + C_4 Pc_4 + C_5 Pc_5}{256}$$

where:

Chr(filtered) = a filtered pixel chrominance component,

C_1, C_2, C_3, C_4, C_5 = programmable chrominance filter coefficients, and

Pc_1, Pc_2, Pc_3, Pc_4, Pc_5 = chrominance component data for vertical pixels P_1, P_2, P_3, P_4, P_5 prior to vertical filtering.

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